Appendix 1: General Server Program Node-Identification Algorithm

```
if (local database contained a previous NIC address)
    {
    if (central DB has node with same current and previous NIC addresses)
        {
        //
        // Central database already aware of the NIC change
        //
        Audit as existing node.
        }
    else if (central DB has node with same previous NIC address and same bios date)
        {
        //
        // NIC change or NIC swap since last audit; follow local database
        //
        Audit as existing node.
        Update central database with new NIC address.
        }
    else if (central DB has a node with same current address and same bios date)
        {
        //
        // HDD swap, local database is from another node; follow current NIC instead
        //
        Audit as existing node.
        }
    else
        {
        Insert as new node.
        }
    }
else
    {
    //
    // No local database found on the node
    //
    if (central DB has a node with same current NIC address and same bios date)
        {
        //
        // Local database lost; follow current NIC
        //
        Audit as existing node.
        }
    else
        {
        //
        // Node has not been audited before
        //
        Insert as new node.
        }
    }
```

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Appendix 2: Start-to-Finish Audit Algorithm

****AGENT****

Try to detect the node's 'OEM serial number'...
    * Compaq BIOS call
    * DMI call

Search for INI file(s) written during previous audit.
if (any INI files found)
    {
    Retrieve 'former NIC address' as it was during the previous audit.
    Note: INI files are timestamped so that we know which one is newer.
    }

Try to detect 'current NIC address'...
    * IPX via Winsock
    * direct IPX call
    * NetBIOS call
    * VINES call
    * request GUID from Windows
    * search Windows registry
    * ask local Novell server

if (no 'current NIC address' detected or found from previous audit)
    {
    if (one or more local fixed disks are available to hold INI files)
        {
        Generate a random 'current NIC address' for use until the real NIC address is detected.
        }
    }

Create a "audit start request" message, containing (among other things):
    * current NIC address (or the temporary address if none)
    * former NIC address (from INI file, if any)
    * OEM serial number (if any)

Send the "audit start request" message to the server.

****SERVER****

Try to detect the node's NIC address from inside the server, by examining the node's NetWare connection.
if (success)
    {
    Discard the agent-detected 'current NIC address' in favor of that detected in the server.
    }

Identify the node...
    {
    if (auditing a NetWare file server)
        {

```
54              if (database has a file-server node with the same name)
55              {   // A server-node is identified strictly by its node-name, as opposed to the
56                  // by its OEM serial no. or /NIC-address. This is because where file-servers
57                  // are concerned, the name *is* a unique identifier.
58              }
59          }
60      else
61          {
62          //
63          // Auditing a regular workstation
64          //
65          if (OEM serial number at least five characters long was detected)
66              {
67              if (OEM serial found in database)
68                  {
69                  Audit as existing node.
70                  }
71              }
72          else if (NIC address available)
73              {
74              if (hidden files contained a previous node address)
75                  {
76                  if (database has a node with same current and previous address)
77                      {
78                      //
79                      // Servers are already aware of the NIC change
80                      //
81                      Audit as existing node.
82                      }
83                  else if (database has a node with same previous address and same bios date)
84                      {
85                      //
86                      // NIC change or NIC swap since last audit; follow hidden files
87                      //
88                      Audit as existing node.
89                      Update node address.
90                      }
91                  else if (database has a node with same current address and same bios date)
92                      {
93                      //
94                      // HDD swap; follow current NIC
95                      //
96                      Audit as existing node.
97                      }
98                  else
99                      {
100                     Insert as new node.
101                     }
102                 }
103             else
104                 {
105                 //
106                 // No hidden files found
107                 //
```

```
                if (database has a node with same current address and same bios date)
                    {
                    //
                    // HDD reformat and ini files lost; follow NIC
                    //
                    Audit as existing node.
                    }
                else
                    {
                    //
                    // Node has not been audited before
                    //
                    Insert as new node.
                    }
                }
            }
        else
            {
            //
            // No NIC, no local fixed drives; must be a lonely audit
            //  Here, the console must inject a node address into the rawfile
            //  before uploading it, unless the rawfile
            // is to be identified by node-name only (a risky venture)
            //
            }
        }
    }

Send an "audit start reply" message back to the agent.
    * The message includes the node's server-detected NIC address, if any.

****AGENT****

Receive the "audit start reply" message from server.

if ("audit start reply" message contains a 'current NIC address' as detected by the server)
    {
    Discard any agent-determined 'current NIC address'
    in favor of the server-determined 'current NIC address'.
    }

if (one or more local fixed disks are available to hold INI files)
    {
    if (any INI files found)
        {
        if (INI file 'current NIC address' is different from the new 'current NIC address')
            {
            Retire INI file 'current NIC address' slot to the 'former NIC address' slot.
            Record 'current NIC address' to the INI file 'current NIC address' slot.
            Refresh INI file(s) with the current date and time.
            }
        else
            {
            The NIC address(es) recorded in the INI file(s) are still accurate.
```

```
            Refresh INI file(s) with the current date and time.
            }
        }
    else
        {
        Record 'current NIC address' to new INI file(s) for use during future audits.
        }
    }
```

Appendix 3: Fake NIC Address Generation Algorithm

```
void GenerateFakeNICAddress(U8 address[6])
    {
    //
    // Create a random NIC address for temporary use by a node that
    // cannot currently detect its own NIC address
    //
    // First three digits are our NIC address block, also known as
    // the ethernet vendor code.
    // 00-90-D4 is NETinventory's official address block as
    // assigned by IEEE on 06/24/1998.
    //
    address[0] = 0x00;
    address[1] = 0x90;
    address[2] = 0xD4;
    //
    // seed random number generator
    //
    srand((unsigned int)(time(NULL)));
    //
    // last three bytes of NIC address are random digits
    //
    address[3] = (U8)(rand() % 256);
    address[4] = (U8)(rand() % 256);
    address[5] = (U8)(rand() % 256);
    }
```